UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 1461

CR NO. 147

OVER THE

BLUE EARTH RIVER

DISTRICT 7 - BLUE EARTH COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 139)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 1461, the North and South Abutments, were found to be in satisfactory condition with no defects of structural significance observed. Random areas of section loss were observed in previously repaired mortar joints at the North and South Abutments. The concrete repairs to both abutments were generally in good condition with several voids and areas of poor consolidation observed. Several masonry blocks at the North Abutment exhibited cracks along with minor loss of section. The channel bottom appeared stable with no evidence of significant scour and no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) Random areas of section loss were observed in the previously repaired mortar joints on the South Abutment, with deficiencies up to 1/2 inch wide having 3 inches of maximum penetration.

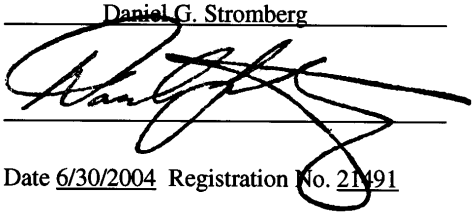
(B) The masonry of the North Abutment has been encased with concrete from 2 feet above the top step to the mudline. The east wingwall has also been repaired with concrete. The concrete repairs were generally in good condition with several voids and random areas of poor consolidation with up to 6 inches of maximum penetration. Random voids, cracks, and loss of section were also observed in several locations along the mortar joints of the masonry blocks.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

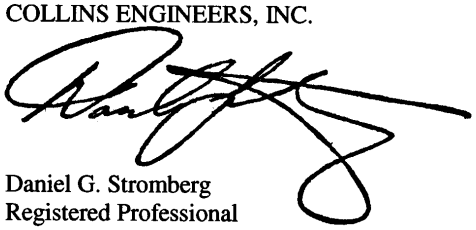
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 1461

Feature Crossed: The Blue Earth River

Feature Carried: CR No. 147

Location: District 7 - Blue Earth County

Bridge Description: The bridge superstructure consists of a single span, steel Pratt Through Truss bridge supporting a timber deck. The superstructure is supported by two stone masonry abutments. Various locations on the abutments and wingwalls have been repaired with concrete. No design drawings with foundation details were provided.

2. INSPECTION DATA

Professional Engineer/ Team Leader: Shirley M. Walker, P.E.

Dive Team: Clayton G. Brookins, Michelle D. Koerbel

Date: November 2, 2002

Weather Conditions: Sunny, " 35E F

Underwater Visibility: "2 feet

Waterway Velocity: "2 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: North and South Abutments.

General Shape: The abutments consist of vertical stone masonry breast walls with skewed and tapered wingwalls. The lower portion of the North Abutment and a wingwall at each abutment have been repaired with concrete.

Maximum Water Depth at Substructure Inspected: Approximately 3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the bearing seat on the west side of the North Abutment.

Water Surface: The waterline was approximately 16.8 feet below reference.
Assumed Waterline Elevation = 83.2.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 6

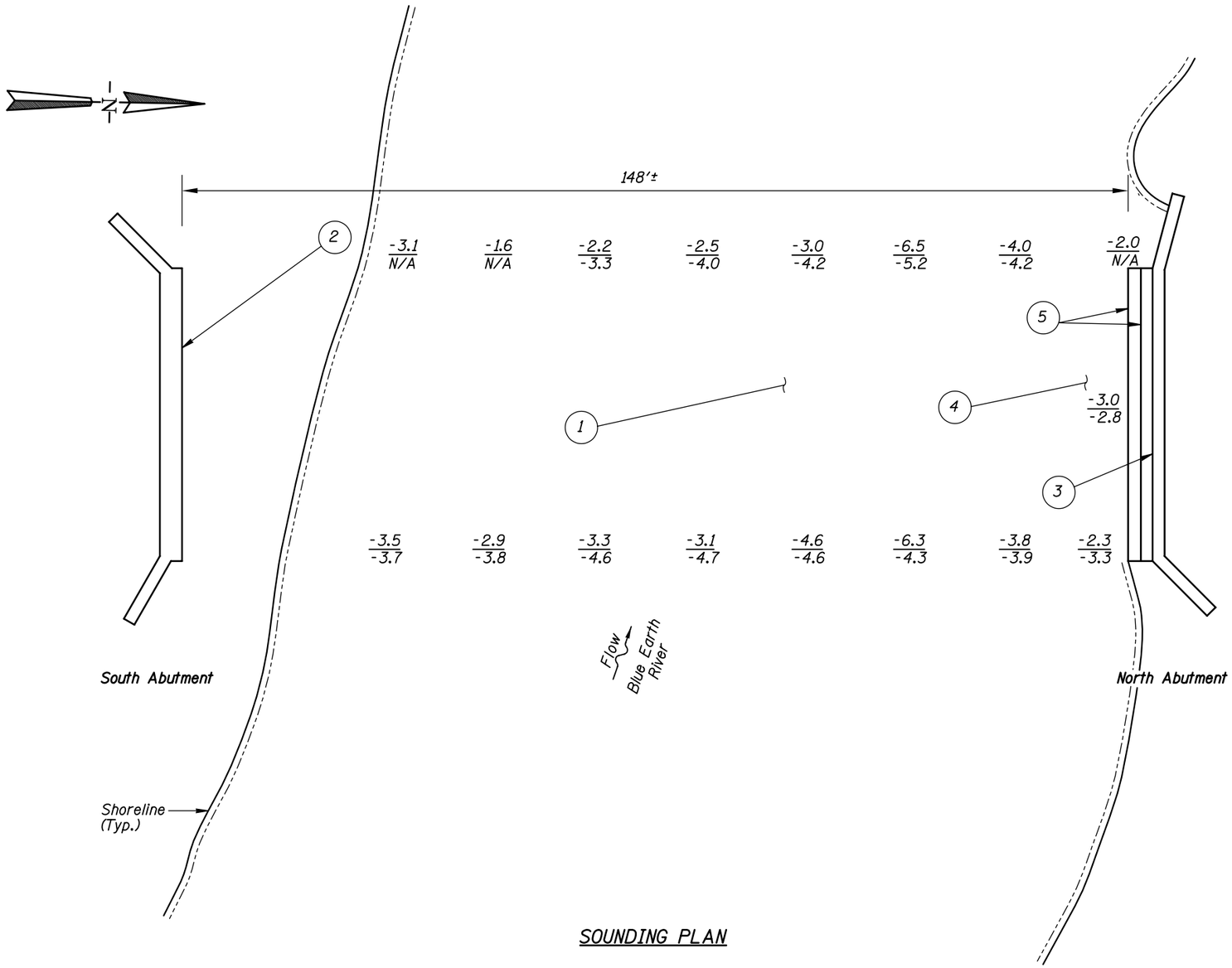
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/11/02

Item 113: Scour Critical Bridges: Code O/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes __X__ No



SOUNDING PLAN

GENERAL NOTES:

1. The North Abutment was inspected underwater. Since the South Abutment is in the water during periods of higher water, it was inspected as well.
2. At the time of inspection on November 2, 2002, the waterline was located approximately 16.8 feet below the top of the bearing seat on the downstream end of the North Abutment. Since insufficient bridge elevation information was available, a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 83.2.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel along the bridge below the location of each vertical member of the truss superstructure, approximately 15 feet on center.

INSPECTION NOTES:

(1) The channel bottom material consisted of firm silty sand with 3 inches of probe rod penetration.

(2) Random voids were observed in the previously repaired mortar joints on the South Abutment, up to 1/2 inch wide with 3 inches of maximum penetration. The east abutment corner and wingwall has been repaired with concrete which was in good condition.

(3) The masonry of the North Abutment has been repaired with concrete from 2 feet above the top step to the mudline. The east wingwall has also been repaired with concrete. The concrete is generally sound and rough formed with some voids and random poor consolidation with up to 6 inches of maximum penetration. Random voids, cracks and loss of section were observed in several locations along the masonry blocks.

(4) The channel bottom along the North Abutment consisted of concrete rubble and riprap with sandy infilling.

(5) Two concrete steps were observed in front of the breast wall of the North Abutment. The tops of the steps were located at 3.8 feet and 1.0 feet below the waterline.

Legend

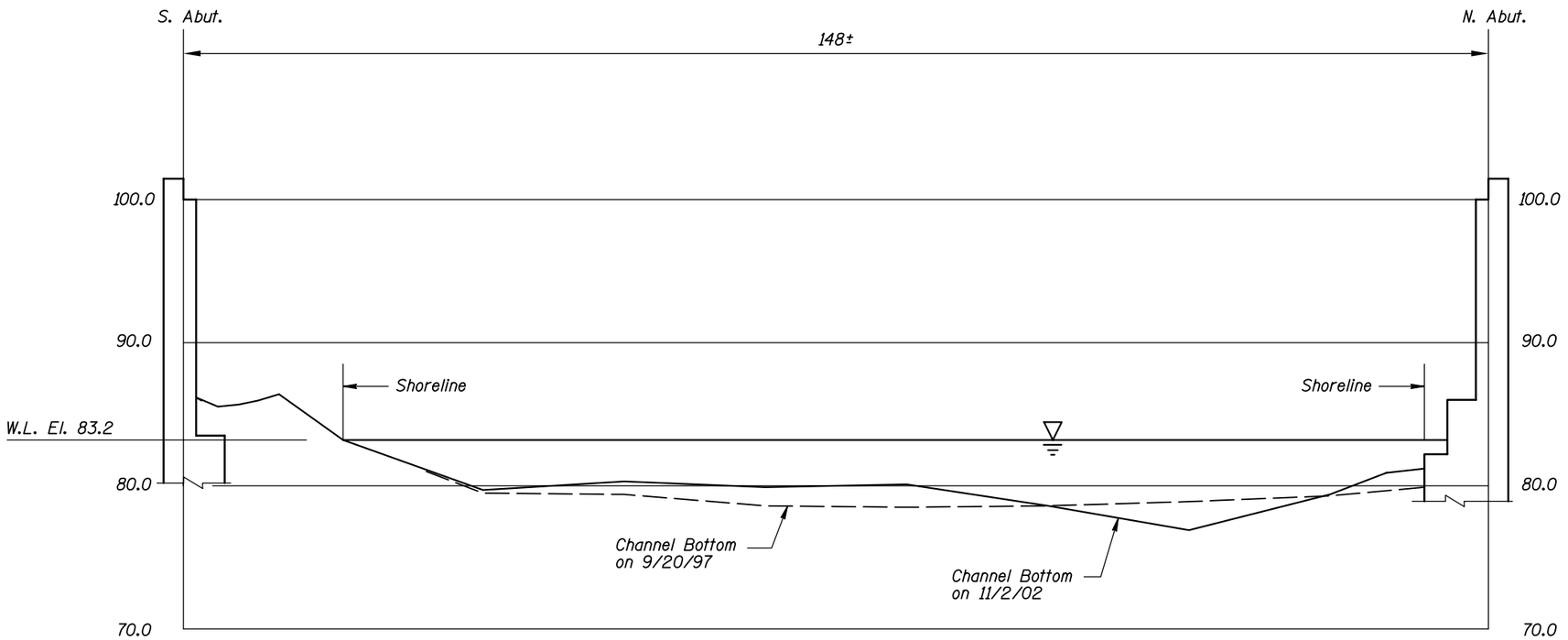
-2.0	Sounding Depth from Waterline (11/2/02)
-5.2	Sounding Depth from Waterline (9/20/97)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

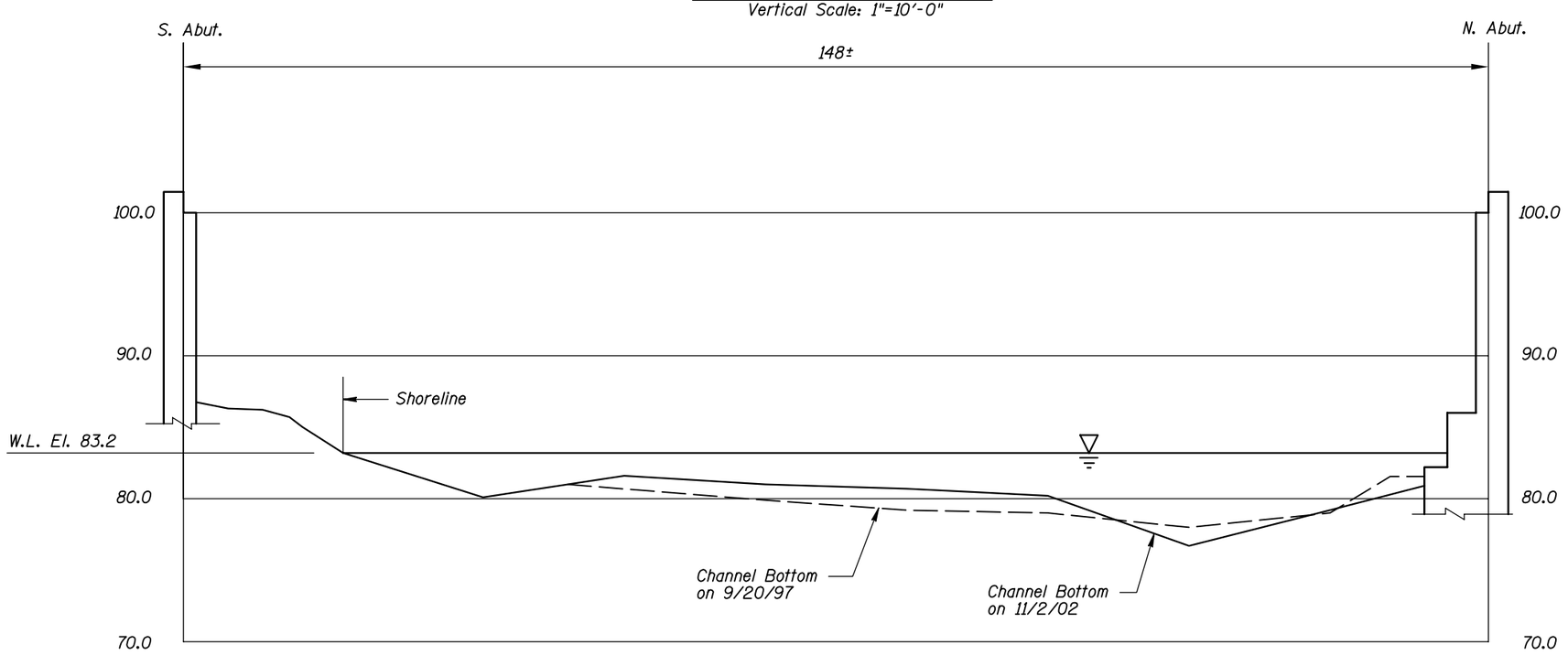
STRUCTURE NO. 1461
OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: NOV. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120139		Figure No.: 1



UPSTREAM FASCIA PROFILE
Vertical Scale: 1"=10'-0"



DOWNSTREAM FASCIA PROFILE
Vertical Scale: 1"=10'-0"

Note:

Refer to Figure 1 for General Notes.

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OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: NOV. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS (U.O.N.)
Code: 35120139		Figure No.: 2

Photograph 1. Overall View of Bridge, Looking Southeast.

Photograph 2. View of the South Abutment, Looking South.

Photograph 3. View of the North Abutment, Looking Northeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: November 2, 2002

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 1461 WEATHER: Sunny, " 35E F

WATERWAY CROSSED: The Blue Earth River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR

X OTHER Low water levels allowed some wading inspection also.

PERSONNEL: Clayton G. Brookins, Michelle D. Koerbel

EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera

TIME IN WATER: 12:55 p.m.

TIME OUT OF WATER: 1:10 p.m.

WATERWAY DATA: VELOCITY "2 f.p.s.

VISIBILITY "2 feet

DEPTH 3 feet maximum at the North Abutment

ELEMENTS INSPECTED: North and South Abutments (South Abutment presently dry)

REMARKS: Overall, the stone masonry abutments were in satisfactory condition with only minor areas of cracking and section loss. Random voids were observed in the previously repaired mortar joints at the North and South Abutments. The repaired concrete sections of the North Abutment were generally in good condition with random voids due to poor consolidation. Several of the masonry blocks at the North Abutment exhibited random cracks and areas of section loss. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

FURTHER ACTION NEEDED: _____ YES ____X___ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 1461
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Blue Earth River

INSPECTION DATE November 2, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (MASONRY)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	South Abutment	0.0’	N	7	N	9	7	7	7	7	7	N	7	7	N	N	7	7	N
	North Abutment	3.0’	N	6	N	9	6	6	7	7	7	N	7	6	N	N	6	6	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the stone masonry abutments were in satisfactory condition with only minor areas of cracking and section loss. Random voids were observed in the previously repaired mortar joints at the North and South Abutments. The repaired concrete sections of the North Abutment were generally in good condition with random voids due to poor consolidation. Several of the masonry blocks at the North Abutment exhibited random cracks and areas of section loss. The channel bottom appeared stable with no evidence of significant scour or appreciable changes since the previous inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.